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1 UNITED STATES DISTRICT COURT  
2 SOUTHERN DISTRICT OF NEW YORK

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3 BIOSIG INSTRUMENTS, INC.,

4 Plaintiff,

5 v.

10 CV 7722 (AKH)

6 NAUTILUS, INC.,

7 Defendant.

8 -----x

New York, N.Y.  
June 27, 2011  
3:00 p.m.

10 Before:

11 HON. ALVIN K. HELLERSTEIN,

12 District Judge

13 APPEARANCES

14 BARROWAY TAPAZ

15 Attorneys for Plaintiff

16 BY: PAUL MILCETIC

17 HPM& B

Attorneys for Plaintiff

18 BY: JOHN H. BONE

19 KLARQUIST SPARKMAN, LLP

Attorneys for Defendant

20 BY: JAMES GERINGER

21 JOHNSON GALLAGHER MAGLIERY, LLC

Attorneys for Defendant

22 BY: JOSHUA M. SIVIN

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1 (In open court; case called)

2 THE DEPUTY CLERK: Counsel, state your appearances for  
3 the record.

4 MR. MILCETIC: Paul Milcetic of Barroway Topaz on  
5 behalf of the plaintiff Biosig.

6 MR. BONE: John Bone on behalf of Biosig.

7 THE COURT: Who is going to be speaking?

8 MR. MILCETIC: Paul Milcetic, your Honor.

9 MR. GERINGER: Jim Geringer from Klarquest Sparkman  
10 for Nautilus, your Honor. I will be speaking.

11 MR. SIVIN: Joshua M. Sivin from Johnson Gallagher  
12 Magliery for Nautilus, your Honor.

13 THE COURT: So I asked for this as a tutorial to help  
14 prepare me for a Markman hearing that will be coming up in a  
15 few days. I thank counsel for coming in on short notice and I  
16 am at your disposal. I guess Biosig should go first.

17 MR. MILCETIC: Your Honor, before I start -- this is  
18 Paul Milcetic again on behalf of Biosig -- maybe I should ask  
19 your Honor what you are looking for.

20 THE COURT: Stand up first of all.

21 MR. MILCETIC: Thank you.

22 THE COURT: Bring the microphone closer to you.

23 MR. MILCETIC: All right. Will do. Should I ask?

24 THE COURT: I would like to hear you explain the  
25 patent and complain what you think is the novelty of the

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1 patent, why it is worth a patent, and then outline for me some  
2 of the terms in the claim that you think will need to be  
3 discussed.

4 MR. MILCETIC: Very good, your Honor. So why don't we  
5 go through the PowerPoint presentation that we put together.  
6 So the '753 patent is the patent that is at issue in this case.  
7 It relates to determining accurate heart rate and displaying  
8 accurate heart rate on an exercise bike or exercise machine.  
9 It can be a StairMaster or bicycle or some type of exercise  
10 equipment. It is actually the type of technology that you  
11 probably have seen if you go to the gym, such as a treadmill,  
12 where you put your hands on the bar and the bar shows you what  
13 your heart rate is while you are running or exercising at the  
14 time. The novelty of this particular patent is that it not  
15 only determines your heart rate, but it does so in a way that  
16 is accurate. Particularly the accuracy comes from the fact  
17 when you put your hands on the bar, your muscle contracts. How  
18 strongly you squeeze the bar or hold the bar may affect the  
19 heart rate calculation. At least that was the problem with the  
20 prior art. What this patent addresses is determining your  
21 heart rate while you're on the exercise bike and doing so in a  
22 way that is accurate so that irrespective of how hard you  
23 squeeze or how hard your muscles contract, you're going to  
24 display an accurate heart rate.

25 So let's go through the claim. There is only one

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1 independent claim in this patent. So a heart rate monitor for  
2 use by a user in association with an exercise apparatus. It is  
3 there you see on the third slide that you got a bar across the  
4 exercise bike and you have a display, which will display your  
5 heart rate. You are going to put your hand in between those  
6 two electrodes on either side of the handlebar and it will  
7 determine your heart rate. I don't think there is an issue as  
8 to this particular phrase, heart rate monitor for your use by  
9 user. So the first phrase of the only independent claim in the  
10 patent, which is where the parties have focused in terms of  
11 what they are asking your Honor to construe is a heart rate  
12 monitor for use is the preamble and it is the heart rate  
13 monitor for use by a user that will read from the patent claim  
14 in association with exercise apparatus and/or exercise  
15 procedures. I don't think the parties have any dispute,  
16 although defendants will have a chance to speak. I don't think  
17 there is any dispute as to whether that preamble is included in  
18 accused Nautilus products.

19 The next slide, an elongate member. So that is the  
20 bar or the bar that is across the front of the exercise machine  
21 that measures your heart rate and displays your heart rate. I  
22 don't believe that there is any dispute that there is an  
23 elongate bar in the accused Nautilus products.

24 THE COURT: So an elongate bar is simply a horizontal  
25 bar?

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1 MR. MILCETIC: Or an elongated bar. Actually in  
2 Nautilus products it is more curved. It is not just straight  
3 or horizontal.

4 THE COURT: Elongated means stretched?

5 MR. MILCETIC: Stretched, agreed.

6 The next element is electronic circuitry. You are  
7 getting this very quickly. Electronic circuitry, including a  
8 different amplifier, having a first input terminal and second  
9 input terminal. This is the circuitry that is within the  
10 exercise machine and what it is designed to do is to filter out  
11 the information that comes from how hard you squeeze the bar so  
12 that all that is left over is the machine measuring your heart  
13 rate. That is done through an electrical circuit or signal  
14 processing. I don't believe there is any difference, that  
15 there is any dispute about whether there is a different  
16 amplifier to the accused product. It is essentially a circuit  
17 that adds or subtracts signals that are inputted into the  
18 circuit.

19 The next slide. The next element is said elongate  
20 member comprising the first half and second half. So what that  
21 requires is that there be two parts to this what you refer to  
22 as an elongated bar, a stretched bar. There is one part and  
23 another part. There is a part that you put one hand on, the  
24 left hand, and there is another part that you put the right  
25 hand on.

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1 THE COURT: Therefore any differential can be  
2 detected.

3 MR. MILCETIC: Correct.

4 THE COURT: Smart.

5 MR. MILCETIC: Correct.

6 I don't believe there is a dispute, again Nautilus is  
7 going to correct me perhaps, as to whether the elongate member  
8 is in the accused product. I believe that both sides agree on  
9 that.

10 The next element is a first live electrode and a first  
11 common electrode mounted on the first half in spaced  
12 relationship with each other. So what that is there are two  
13 electrodes. There is two materials that will pick up  
14 electrical signals from your hand on the first half and the  
15 same thing is true on the second half. So you can see on that  
16 screen. What you do is put your hands in the middle of those  
17 two electrodes and there is a spaced relationship, meaning  
18 there is space in between. What that space is designed to do  
19 is through experimentation and through sort of trial and error  
20 you can determine a way of spacing them in such a way so that  
21 the amount that you squeeze and the amount that you use your  
22 muscles won't affect the heart rate calculation. So space  
23 relationship just means there is a particular space in between  
24 those two from our speculative. I think there is a dispute  
25 about this and you will hear from Nautilus on this. There is a

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1 space in between those two electrodes that you put your left  
2 hand on. That is the first half.

3 The next slide is a second live electrode and the  
4 second common electrode mounted on said second half in spaced  
5 relationship with each other. Same thing as the other side.  
6 You put your right hand on the other side of the handle of the  
7 bike and there is a spaced relationship between those two  
8 electrodes as well. Again, I think there a dispute between the  
9 parties as to what spaced relationship requires. From our  
10 perspective, it is the plain meaning. There is a particular  
11 amount of space between the two that is designed to again to  
12 prevent the amount that you squeeze from causing an error in  
13 heart rate calculation.

14 The next slide first and second common electrodes  
15 being connected to each other and to a point of common  
16 potential. So basically what this means is that the two  
17 interelectrodes from a circuitry standpoint are connected to a  
18 ground. I don't think there is any dispute that that is in the  
19 accused product. Again, if there is a disagreement I am sure  
20 you will hear about it.

21 The next one is that first live electrode being  
22 connected to said first terminal of said different amplifier  
23 and said second live electrode being connected to said second  
24 terminal of said different amplifier. So what this is doing is  
25 you are connecting to an amplifier, to a circuit both the outer

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1 electrode that we talked about, one on the left and one on the  
2 right, the outer electrodes, and what you are doing is you are  
3 connecting it to a different amplifier which is essentially  
4 adding these two signals together to make sure that they come  
5 out to be zero and the reason you want to make them come out to  
6 be zero when you are talking about the electromyogram signal is  
7 that you want the parts of the signal that relate to how strong  
8 you hold the handlebar to cancel out so that all that is left  
9 is the part of the signal that measures your heart rate. That  
10 is basically the idea. So you have a connection to this  
11 particular circuit which adds and subtracts. I don't think  
12 there will be a dispute about that.

13 A display device disposed on said elongated member.  
14 This is what shows your heart rate. If you have a bar or  
15 stretched out element, there is a display that shows what your  
16 heart rate is essentially when you are exercising on the  
17 machine. That is what the display is.

18 So wherein said elongate member is held by said user  
19 with one hand of the user on said first half contacting with  
20 said first live electrode and said first common electrode. So  
21 when you hold it with your left hand, you are contacting both  
22 electrodes on the left side. Again, there is a space between  
23 the two electrodes on the left side. And said first common and  
24 second -- first common electrode and with the other hand of the  
25 user on said second half contacting said second live electrode



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1 which was a second common electrode. So you do the same thing  
2 on the other side. I think there is a dispute here about this  
3 issue.

4 So what we would say is this a system claim, this is  
5 an apparatus claim which means that the function of that bar is  
6 that you hold it in those places. Again, if you don't  
7 understand something just speak up. But basically what we're  
8 saying there are two electrodes on either side and hold it in  
9 the middle. That is what the function is. What the defendants  
10 I think are saying is that a person actually has to be holding  
11 this, both sides, before there is infringement. And the reason  
12 we disagree with that is because this is an apparatus. In  
13 other words, the way that you patent an invention is you cover  
14 the component and you talk about what is the function of these  
15 components as opposed to saying that it is actually -- that  
16 somebody actually has to be standing there before you infringe.  
17 The reason I think the defendants are doing this is because  
18 there is a part of the patent law, direct infringement versus  
19 indirect infringement, where to show indirect infringement you  
20 have to prove that you induced somebody to do this, whereas  
21 direct infringement happens when you just make the seller use  
22 the product. If the Court interprets this in such a way that  
23 someone has to be standing there there is no infringement until  
24 someone is standing there, which means I think where the  
25 defendants are going with this is to say, Well, there is no

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1 infringement until you induced, you caused somebody to do that  
2 as opposed to what we would say is, Whenever you sell that  
3 since the function is that people will put their hands there  
4 whenever you sell that you infringe. So I think that could be  
5 a potential disagreement between the parties.

6 THE COURT: Not necessarily in the definition.

7 MR. MILCETIC: Well --

8 THE COURT: We'll see.

9 MR. MILCETIC: I think their definition is there is  
10 somebody there actually holding basically. But you are right  
11 that there is no difference in terms of technical meanings or  
12 anything along those lines. Both parties agree that the point  
13 is you stand there and hold it.

14 The next element is whereby a first electromyogram  
15 signal will be detected between first --

16 THE COURT: You are swallowing your words.

17 MR. MILCETIC: I am sorry.

18 THE COURT: The word you are missing, Jennifer, is  
19 electromyogram.

20 MR. MILCETIC: The next element is: Whereby a first  
21 electromyogram signal will be detected between said first live  
22 electrode and said first common electrode and a second myogram  
23 signal of substantially equal magnitude and phase to said first  
24 electrode signal will be detected between said second live  
25 electrode and said second common electrode. What this is

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1 saying is you are holding your hands on both sides and in terms  
2 of what electrical engineers call magnitude and phase, the  
3 signal is essentially the same. It is going to be the same  
4 from the right and the same from the left in terms of magnitude  
5 and phase. What that means is when that signal goes through  
6 the differential amplifier and it is subtracted since both  
7 numbers are the same, it is going to wind up zero more less  
8 which means that the electromyogram signal, the signal that  
9 refers to how strong you are holding that bar is not going to  
10 impact. It is not going to be noise that impacts the system's  
11 calculation of your heart rate, which is the point of the  
12 invention.

13 There are a couple of issues that the defendants have  
14 raised here with this element?

15 THE COURT: Let's not worry now so much about the  
16 definitional -- I am trying to say cute words -- the  
17 differential of the interpretation.

18 MR. MILCETIC: Okay.

19 THE COURT: The interpretive differential.

20 What you are doing now is you want to have some kind  
21 of a measurement and build some kind of device capable of such  
22 measurement to allow a person who is actively exercising  
23 through some kind of gym machine to know what his heart rate is  
24 and thereby not to allow it to go over a certain level  
25 considered safe or appropriate exercise goal. What you are

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1 doing is measuring the pulse rate that flows through the  
2 members of the body and putting it into a machine. But since  
3 you are getting in general how people are different pulse rates  
4 depending where you are putting a hand on a bar and between  
5 both hands you have to figure out some way to detect the  
6 differential and cancel it and the patent I assume is this  
7 method of detecting the differential and cancelling it.

8 MR. MILCETIC: I agree except that it is not a method.  
9 It is a system of components but that is correct. In patent  
10 law we make a difference between methods and systems but that  
11 is correct.

12 THE COURT: So ultimately this claim has to teach  
13 someone skilled in the trade to make something like that?

14 MR. MILCETIC: Yes.

15 THE COURT: If doesn't teach them how to do it, it is  
16 not a good patent. If it does and it meets the requirement of  
17 novelty, it is a good patent.

18 MR. MILCETIC: That is correct. If it is novel and it  
19 teaches one of ordinary skill in the art how to build one of  
20 these things than it is a good patent. If it doesn't meet the  
21 requirements of 35, U.S.C., section 112 or 102 then it is not a  
22 good patent.

23 THE COURT: So now we can listen to your adversary.

24 MR. GERINGER: Thank you, your Honor. Jim Geringer  
25 for Nautilus. One point, if we can get my slide up, your Honor

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1 just raised was if it enables. Several years ago the first  
2 time this case was before the Court, my predecessor sought a  
3 summary judgment motion and they said it does not enable.

4 THE COURT: It what?

5 MR. GERINGER: You cannot get these equal signals.

6 THE COURT: Not what?

7 MR. GERINGER: Not enabled. It will not teach  
8 somebody how to build this so that you can get these perfectly  
9 equal signals or so equal that they zero out because there is  
10 chaos going on on the palms and the electric signals and  
11 muscles and it is very hard to get equal. That is what we  
12 briefed and Biosig submitted an expert declaration that said  
13 basically Dr. Galiana from McGill University in Toronto said I  
14 gave Figures 1 and 2 of the patent to my graduate assistant and  
15 he built it in two hours.

16 Now, on the screens here we see it is a really three  
17 heart monitor devices, your Honor, because the patent needs to  
18 be understood in context because of the reexamination they  
19 distinguished the monitor that is on the right. So the monitor  
20 that is on the right has two electrodes just like two pairs of  
21 two electrodes.

22 THE COURT: Two things on the right, Figure 1.

23 MR. GERINGER: Figure 1, we call it Fujisaki. This is  
24 much earlier, more than a decade before the patent is filed.  
25 And he has two electrodes on a bar with a space in between.

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1 Two of those electrodes are live going to a dif amp and two of  
2 those electrodes go to the ground. It is wired and built just  
3 like the basics of what was just described.

4 Now, the next slide, your Honor, is what they told  
5 this Court demonstrated the invention and they built it and  
6 they told the Court, Here is what my grad student can put  
7 together in two hours. And those gold bands there, the cooper  
8 bands, those are those electrodes, on the left and on the  
9 right. Each has a pair and on the left and the right each goes  
10 to -- one signal goes to the end of the dif amp and one signal  
11 goes into the -- the differential amplifier, I am sorry, your  
12 Honor. I will start over.

13 THE COURT: The dif amp is the differential amplifier?

14 MR. GERINGER: Yes.

15 THE COURT: "Dif" meaning differential?

16 MR. GERINGER: Yes.

17 THE COURT: What is the differential, between what and  
18 what?

19 MR. GERINGER: It is the different between the heart  
20 signal, because the heart signal is on your left side your body  
21 so it has a different polarity. I can describe it to your  
22 Honor in this way: What a differential amplifier would do is  
23 take the -- I have the definition right here on the screen --  
24 it will amplify the difference. That is why we call it a  
25 differential amplifier.

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1           So a heart signal has a asymmetry to it, left and  
2 right. You will have opposite polarities on each side. So Dif  
3 amp will take that difference and add it. So if I had  
4 Dr. Galiana, as an example, for Biosig back then I have signal  
5 one M 1 plus noise. Signal 2, M 2 plus noise. M 1 is the  
6 opposite of M 2. So the dif amp adds M 1 and M 2, subtracts M  
7 minus M. The concept is add things that are different,  
8 subtract things that are the same. If muscle is the same on  
9 each side, it gets subtracted out. The heart being different  
10 on each side, gets added up. So this weak heart signal that  
11 filters out to the hands, it gets amplified because it is  
12 different on each palm, and the muscle signals, which are  
13 theoretically according to the claim, the same on each side  
14 gets subtracted at zero.

15           But before you think I am arguing for plaintiffs, I  
16 want to return to this point: They said when first sued Biosig  
17 said, This is easy to build. Nautilus says you cannot build  
18 it. We did in two hours. Look how they built it. They took a  
19 fat strips of cooper narrowly separated and put them on a metal  
20 dowel.

21           THE COURT: Is this what I have to deal with in the  
22 Markman hearing.?

23           MR. GERINGER: Yes. Because in the reexamination  
24 hearing, in the reexamination process, we showed that first  
25 Fujisaki monitored the Patent Office. As you can see, your

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1 Honor, it is very similar. It has two pairs of electrodes, two  
2 going to a dif amp, two go to ground. So it does the same  
3 thing and that patent, which is presumed valid, same  
4 presumption that their patent gets, that patent describes why.

5 I will be happy to hand this up. It is the Fujisaki  
6 patent. Each of the grips composed of two cylindrical  
7 electrodes. The electrical circuit includes a differential  
8 amplify having input from those grip centers for amplifying the  
9 difference between the heart pulse and when a person grips the  
10 left and right hand grips, preferably the palms covering the  
11 sensors, you filter out, it says, AC hum and human body hum.  
12 Those are noises. If you are standing on the machine and it is  
13 plugged in, there is a 60 Hz cycle from being plugged in.  
14 Well, that will come through both left and right through the  
15 exerciser. It gets canceled out in the dif amp.

16 The heart remembers what you are trying to amplify,  
17 the muscles are trying to subtract. That Fujisaki did the same  
18 thing the same way and when they got to reexam, your Honor,  
19 they had to distinguish it. When they distinguished it, they  
20 threw the baby out with the bath water because they  
21 distinguished their--

22 THE COURT: Mr. Geringer, I am sure at some point I am  
23 going to be listening to this. It is not going to help you at  
24 the Markman hearing. Skip it.

25 MR. GERINGER: I understand, your Honor. If your



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1 Honor would like me to skip --

2 THE COURT: You are telling me about the prior art. I  
3 already know about the prior art.

4 MR. GERINGER: Your Honor, the only reason I think --

5 THE COURT: Before Biosig came around with its  
6 machine, if I was riding on an exercise bike and put both hands  
7 down, could there be a monitor?

8 MR. GERINGER: Yes.

9 THE COURT: What is novel claims for this? What  
10 according to the claim is novel? Forget whether or not the  
11 claim can stand up. What does the claim say about itself as a  
12 novelty?

13 MR. GERINGER: As articulated in the reexam, your  
14 Honor, what is novel is that it has prebalancing so that any  
15 one can grip it with any kind of squeezing and it will always  
16 stay balanced. It is prebalanced. That is what they said.  
17 The configuration of these electrodes is what they said the  
18 heart of the invention. They call that the present inventive  
19 concept. This preconfiguration balancing these electrodes so  
20 you always get that cancelling. That is what they said was  
21 novel. They said it wasn't in that piece of prior art because  
22 the reexam is all about describing how you are novel over this  
23 prior art. So I have from both sides, if I understand what  
24 goes on, a chart, the claim language that is to be construed is  
25 set out on the left, the precise words for construction being

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1 in bold, otherwise the rest of the sentence is in plain type,  
2 and then I have the proposed construction by Nautilus and then  
3 the proposed construction by Biosig.

4 Have you folks gotten together to see if you can come  
5 to agreement on some of these disputes?

6 MR. GERINGER: We continue to constantly discuss this,  
7 your Honor. We've come to a lot of agreement and we'll  
8 continue discussing it. We have a good relationship with  
9 plaintiff's counsel in the sense that while we disagree on the  
10 conclusions, we're trying to reach as much agreement as  
11 possible.

12 MR. MILCETIC: Your Honor, I personally agreed on  
13 this. Maybe we can set a date. After this we just can't agree  
14 on anything further. Maybe that makes sense.

15 THE COURT: When is the Markman hearing.

16 MR. GERINGER: July 5th. My conversations were  
17 primarily with Mr. Milcetic's co-counsel, his colleagues. We  
18 think we reached as much agreement as we can. One can see, for  
19 example, in the black square boxes, we think those are the most  
20 critical areas of disagreement. On the left there are some  
21 terms that are in boxes.

22 MR. MILCETIC: I think it is worth one week to confer  
23 and try to narrow our differences if we can.

24 MR. GERINGER: We would be happy to do that.

25 THE COURT: There is a certain time when it is not

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1 productive. But, for example, looking at a differential  
2 amplifier and the agreed language is rotten stilted, you can do  
3 better. You are not writing for a patent examiner; you are  
4 writing for me. I am not a patent lawyer. I know that  
5 differential amplifiers are on the market.

6 MR. GERINGER: May I ask, your Honor, if what is up on  
7 the slide now is the English definition for the first line,  
8 first bullet point only.

9 THE COURT: It seemed to be the way to define it. A  
10 differential amplifier modifies and amplifies the difference  
11 between two signals.

12 MR. MILCETIC: Yes.

13 MR. GERINGER: The parties agree on that.

14 MR. MILCETIC: Yes.

15 MR. GERINGER: We'll incorporate that, your Honor.

16 Your Honor, the first blacked box really is where the  
17 rubber starts meeting the road and we're not trying to do the  
18 Markman hearing today I know, but as far as tutorial goes any  
19 explanation of why spaced relationship might matter, why -- in  
20 some of my slides, your Honor, I was ready and willing to go  
21 through the idea of how the heart wave, what the heart wave  
22 looks like and what is being detected here and how you  
23 calculate the pulse.

24 THE COURT: That is worthwhile.

25 MR. GERINGER: May I? If we start on this slide, your

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1 Honor, this is a page from Biosig's expert report so I propose  
2 it --

3 THE COURT: Before you do is that, looking at this  
4 spaced relationship.

5 MR. GERINGER: Yes.

6 THE COURT: There is no problem with live electrode.  
7 No problem with common electrode.

8 MR. GERINGER: Yes, your Honor.

9 THE COURT: Speak too quickly. The two common  
10 electrodes are connected to each other and to a point of common  
11 potential such as ground. What does common potential mean?

12 MR. GERINGER: Same chart, your Honor. So, for  
13 example, if both Mr. Milcetic and I touch the same person, we  
14 have a common potential with static electricity. We might be  
15 given a shock at first but at that point we both have common  
16 potential. It is not necessarily true ground if we both  
17 touched the same thing then it is the common thing that gives  
18 us the common potential.

19 Would you agree, Mr. Milcetic?

20 MR. MILCETIC: Yes.

21 MR. GERINGER: Ground is zero, zero, zero. So we all  
22 know when we jump a car battery or work on electricity, you  
23 want to make sure what ground is.

24 THE COURT: So it is a point of common preference?

25 MR. GERINGER: Yes, your Honor.

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1           So the next thing, spaced relationship, what is going  
2 to happen in the briefing is the parties are going to focus a  
3 lot on what was said in the reexam about spaced relationship.  
4 But returning to how this works, your Honor, up on the screen I  
5 have the heart wave.

6           THE COURT: Yes.

7           MR. GERINGER: So what is being measured here isn't  
8 actually blood pressure. If you take your pulse at your wrist,  
9 you are actually feeling fluid flow. You are feeling pressure  
10 that comes out from the heart. A little before that fluid flow  
11 there is an electric pulse. It has this shape and they call it  
12 the PQRS for characteristics of this shape. What these heart  
13 rate monitors are trying to do when they measure the electric  
14 pulses is trying to catch that R wave. They are trying to  
15 catch it because if you have one R wave every second, you would  
16 have 60 beats a minute and your pulse would be 60. If you had  
17 two per second, it would be 120, hopefully actively exercising  
18 at that point.

19           This is just a blowup of that, what they call QRS  
20 complex. Nothing here needs to be understood to deep level of  
21 technical detail because the parties both agree we're trying to  
22 pick out the R wave. Now, the heart wave, and we can think of  
23 the fancy word, ECG, the heart wave is timed as I said by the  
24 number of beats per minute and this again from their -- this is  
25 not from their report. It is from a book earlier, 1988, that

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1 describes a lot of different ways of calculating heart wave.

2 This is one divided by 60.

3 Now, muscle noise is represented here in red and if  
4 you see that R wave now, it looks kind of hidden, again this is  
5 from Biosig's expert report. I only present it so we're all on  
6 the same page. The idea here behind the patent and what is  
7 behind Fujisaki and the reexam we discussed a lot is how do we  
8 flush that R wave out.

9 THE COURT: So if you take your pulse at the wrist  
10 where the vein comes very close to the skin, you can feel the  
11 pulse?

12 MR. GERINGER: Yes, your Honor.

13 THE COURT: If you try to take it in your middle  
14 finger, it is hard to find the pulse?

15 MR. GERINGER: Correct, your Honor, but that is  
16 pressure under that fluid flow. There is something similar  
17 about electronics, though. Because electric signals have to  
18 travel a long way from the heart to the fingers. So if you  
19 really wanted an accurate heartbeat electrically, you might put  
20 it closer to the heart. So part of the idea here, and this is  
21 their commercial product, your Honor, is that you could grab it  
22 and my heartbeat is way too high because I am in open court  
23 arguing. But live common or maybe it is live common, I don't  
24 know how they wired these two, but if I have just one hand,  
25 nothing. One hand nothing. Two hands, readout.

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1 Fujisaki worked we said the same. So in the Markman  
2 we're going to be talking not about disagreeing about the basic  
3 way differential amplifier sorts this out. We'll be talking  
4 about this critical spaced relationship. They said the spaced  
5 relationship is critical. Fujisaki will not work in all  
6 conditions they said. Our invention will because our intention  
7 especially understands that spaced relationship.

8 THE COURT: There is a lot of pressure on defining  
9 spaced relationship.

10 MR. GERINGER: Yes, your Honor.

11 THE COURT: So the relationship defined by the  
12 relationship between the measurement between one point and  
13 another point.

14 MR. GERINGER: We say so, your Honor. Biosig will  
15 have to answer. I am looking for a big picture, but on the  
16 parties' joint chart, page 2, I have a small excerpt of a  
17 figure from the patent in which I show, yes, it is the width of  
18 the band and the width of the gap in between and the reexam we  
19 will argue that they said certain things. I am not trying to  
20 make the argument today. I am saying there were arguments  
21 about how far you space them and how fat you make the  
22 electrodes. Also, are they going to be rings? Are they going  
23 to be plates? You might go to a gym, see a machine, it doesn't  
24 have rings, it might just have plates. I will show your Honor  
25 an example of an accused product.

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1           Again, this is not for construction, your Honor. It  
2 is merely for you to understand what the parties are disputing.  
3 The picture up on the screen is --

4           THE COURT: Biosig wants to talk not about lineal  
5 relationship but a geometric relationship. So, Mr. Milcetic,  
6 why should geometric be introduced here if it is not in the  
7 claim itself?

8           MR. MILCETIC: Geometric should be introduced --

9           THE COURT: It means geometric relationship.

10          MR. MILCETIC: We're trying to say the plain meaning  
11 here.

12          THE COURT: But geometric is not part of the plain  
13 meaning of the claim so why do you want to add that word?

14          MR. MILCETIC: We don't have to.

15          THE COURT: I can think of at least two relationships.  
16 Maybe there are more. There is a lineal relationship and there  
17 is a geometric relationship.

18          MR. MILCETIC: I think when we said geometric we were  
19 just thinking space from algebra, axis and in space. There is  
20 a spacial relationship between two electrodes. That is all.

21          THE COURT: Why is it geometric rather than lineal?  
22 There is also a measurement putting a straight line to a curved  
23 line.

24          MR. MILCETIC: Yeah. Well, I think lineal is okay. I  
25 don't think we have a problem with that. Our position is



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1 basically the plain meaning.

2 THE COURT: So what you want to say is space  
3 relationship is a relationship according to a measured distance  
4 between two points.

5 MR. MILCETIC: That's fine with us.

6 MR. GERINGER: That's also fine for Nautilus, your  
7 Honor.

8 THE COURT: That is much simpler.

9 MR. GERINGER: To be clear, your Honor, it is the  
10 width of the pass and the width of the space between them and  
11 the width, just to use this as an example, the width of an  
12 electrode and space between.

13 THE COURT: So it is a relationship measured according  
14 to distance between two points?

15 MR. GERINGER: Yes, your Honor.

16 MR. MILCETIC: That's exactly correct.

17 THE COURT: That's a spaced relationship. So the live  
18 electrode, the first live electrode and first common electrode  
19 have a certain distance between them and the second live and  
20 second common electrodes have another distance between them.

21 MR. GERINGER: Correct, your Honor. That can be  
22 symmetrical or not.

23 THE COURT: We don't know.

24 MR. GERINGER: Correct.

25 THE COURT: So that will be the definition.

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1 MR. GERINGER: That's fine, your Honor.

2 MR. MILCETIC: That is fine with Biosig, your Honor.

3 MR. GERINGER: Your Honor, if I may move to another  
4 simple term. On page 4 of the parties' chart it says, Where --

5 THE COURT: I don't have it.

6 MR. GERINGER: There is a footer in very small print.

7 THE COURT: Got it.

8 MR. GERINGER: It says, Where elongate member is held,  
9 here we really should be able to come to agreement, but there  
10 is a disagreement underlying it. Everyone seems to want to say  
11 held is held. If you made contact, you are holding it. The  
12 reexam is going on and on about what kind of hold? Are you  
13 gripping? Are you relaxed? Are you tight?

14 THE COURT: There is nothing in the claim that talks  
15 about that.

16 MR. GERINGER: We certainly agree with that, your  
17 Honor.

18 THE COURT: It is held enough so you can make a  
19 measurment. So we have elongate member.

20 MR. GERINGER: A lengthened member, a stretched out  
21 member I believe your Honor suggested. Stretched out.

22 MR. MILCETIC: That would be fine with Biosig, your  
23 Honor.

24 THE COURT: Such as a rod?

25 MR. GERINGER: Correct, your Honor. To be clear in

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1 the prior case they sued Kliner bikes which had --

2 THE COURT: What this a prior case?

3 MR. GERINGER: Your Honor, this suit was originally  
4 filed in 2004 and it was before your Honor. There was some  
5 motion practice and then we found the Fujisaki patent. We went  
6 to the Patent Office and said, Please reexam it. And when they  
7 said they would, we came to your Honor jointly and said, Will  
8 your Honor please stay the Biosig v. Nautilus case pending the  
9 Patent Office reexamination. Your Honor said, I will not stay  
10 it, but I will dismiss it and let you toll statute of  
11 limitations. So that is what the parties did. We considered  
12 this Biosig two. And when I say the prior case, I mean that  
13 Biosig one case.

14 THE COURT: It is a case which I received from Judge  
15 Owen. Let's go back to the elongate member.

16 MR. GERINGER: So that is a long member. It would not  
17 be -- for example, we had previously been accused of like you  
18 sit back on these recliner bikes in a gym, if I had electrodes  
19 on both arms of my chair, I wouldn't call that on the same  
20 elongate member, but my understanding is that is no longer  
21 being accused so I don't think we'll have --

22 THE COURT: So it is something like a situation where  
23 the user puts his left hand on the left-hand side of electrodes  
24 and his right on his right-hand side of the electrodes holding  
25 each.

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1 MR. GERINGER: That is the elongated member.

2 THE COURT: That is what we'll do. I think you folks  
3 can give another try at this using the definitions here.

4 MR. GERINGER: We'll do that. Would you like us to  
5 submit another joint chart?

6 THE COURT: I would.

7 MR. GERINGER: We'll do that before the hearing.

8 THE COURT: Yes.

9 MR. GERINGER: To confirm, your Honor, we asked for  
10 two extra days for briefing. I will be flying back tonight and  
11 we're going to get into the briefing.

12 THE COURT: We'll go off the record.

13 (Discussion off the record)

14 MR. GERINGER: This accused product that I show on the  
15 screen, it is very important that accused products are never  
16 used to construe the claims. That is true. The Circuit has  
17 been clear that you can take a peek to understand what the  
18 parties are fighting about. So, for example, these aren't  
19 rings and you see how they are spaced.

20 THE COURT: I am not helped by this.

21 MR. GERINGER: Then let me go back to the chart and  
22 look for another term to simplify, your Honor.

23 THE COURT: There is a rod. It doesn't make that rod  
24 is broken by space or another object or whatever.

25 MR. GERINGER: Elongated member is a good, clear

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1 example, your Honor. We don't have a problem with that. I  
2 wouldn't dispute that.

3 THE COURT: Let's go to page 5.

4 MR. GERINGER: On page 5 the black box term is maybe  
5 the most central term the parties will be debating.

6 THE COURT: Let's be clear on electromyogram. It is  
7 an electrical signal produced by muscles other than the heart.

8 MR. GERINGER: Yes.

9 THE COURT: Electrocardiograph is an electrical signal  
10 produced by the heart.

11 MR. GERINGER: Yes, your Honor.

12 THE COURT: So what this patent has to do is take a  
13 differential of one from another, am I right?

14 MR. GERINGER: Charge is important. Muscle has same  
15 chargeable signs, heart opposite. The differential amplifier  
16 will subtract the same charges but add opposite charges. So  
17 the heart is special because the heart is not symmetric. The  
18 heart is on the left. And just the way biology works, they say  
19 opposite polarity. So I don't get equal heart signals in my  
20 right and left hand. The other muscles, they say they will  
21 detect equal heart signals. That is what this claim is about.

22 THE COURT: What the biology, one ventricle is  
23 positive and another is negative?

24 MR. GERINGER: I think it is because it is on the  
25 left. Do you know?

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1 MR. MILCETIC: I think that is right.

2 MR. GERINGER: I think it is the asymmetry of the  
3 body. If I had somebody with a heart rate in the middle, in  
4 theory I wouldn't set up those competing electric fields. Like  
5 I think if I squeezed one hand, that is not symmetric now  
6 either.

7 THE COURT: So is it an oscillating value?

8 MR. GERINGER: I think so. This wave we showed, let  
9 me show a closeup. This is the closeup.

10 THE COURT: Yes.

11 MR. GERINGER: That is the same wave now six times.  
12 So this is this complex wave six times.

13 THE COURT: If you look at the line across, some  
14 values are above and some are below.

15 MR. GERINGER: I don't know why that is. I don't know  
16 that is a zero axis, your Honor. It certainly is showing you  
17 that chart that similar things are going up and things are  
18 going down. The electric charge flowing out of the heart is a  
19 rollercoaster ride and that is up and down.

20 THE COURT: In other words, what you are saying though  
21 is that since the signal of the heart is plus and minus and the  
22 signal of the muscles is plus and steady, you take an average  
23 of the muscle signal and you add the heart signal and you  
24 subtract the average against the sum.

25 MR. GERINGER: Can I try that?

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1 THE COURT: Yes. It not very good.

2 MR. GERINGER: Let me try it. What is happening is  
3 you are taking the heart signal as it is detected in the palms  
4 and because that is going to be opposite polarity is the word  
5 but opposite charge, it will get added. Opposite charge  
6 signals will be added because muscle of the same charge, they  
7 will be subtracted if they are the same. Anything similar,  
8 anything that is the same will be subtracted. Anything that  
9 is different will be added.

10 See, that is key because, for example, when Biosig was  
11 explaining before they kept saying, while exercising, while  
12 exercising. We don't know frankly why they leave in the "while  
13 exercising" in this claim. But while exercising there is a lot  
14 of activity in the hands and people's hands can move. So  
15 assuming equality, assuming identity between those two hands,  
16 muscle signals, is an assumption.

17 Nature doesn't mandate that. Nature mandates that  
18 your heart will have opposite polarities. Nature doesn't  
19 mandate that your hands are given off equal signals. And in  
20 the first case, in fact there was a motion brought saying you  
21 can't ever find really equal signals because there is too much  
22 chaos going on, and the parties will debate that.

23 THE COURT: Okay.

24 MR. MILCETIC: Your Honor, you can jump in, but the  
25 differential amplifier recently subtracts. It basically

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1 subtracts. So if you have two positive numbers, five and five,  
2 and you subtract that is your muscle signal. Five minus five  
3 is zero. That is what the claim says you want. You want the  
4 muscle squeezing and the effect of the muscle signal to have no  
5 impact on the heart rate calculation. As he pointed out, the  
6 cardiac signal because it is opposite, because it is a negative  
7 five and a five were not subtracted which would give it  
8 negative 10.

9 MR. GERINGER: Positive 10.

10 MR. MILCETIC: So it is amplified. The point is it is  
11 not zero, which is what you want. You want the cardiac signal,  
12 your pulse rate, to be determined without that noise that comes  
13 from the muscle signal. That is essentially what he is talking  
14 about.

15 MR. GERINGER: So, your Honor, not to pretend to be  
16 scientifically accurate here but to give you the sense of the  
17 scale, the muscle might be five on a scale of like five and the  
18 heart might be on a scale of point five. So point five minus  
19 negative point five, I am up to one. Five minus five, I am  
20 down to zero. Suddenly point five stands out whereas before  
21 the five is passing.

22 This term that is in the square box here, the  
23 "whereby," basically comes down and says two equal muscle  
24 signals will be detected at the differential amplifier at the  
25 input. In the diagram here that comes from the patent, the



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1 diagram below, it shows the boxes and the drawing on the  
2 bottom, Figure II, the boxes at the top, No. 9, 11, 15 and 13,  
3 those correspond to the electrodes shown in this commercial  
4 embodiment in my hand. So 9 and 13 --

5 THE COURT: Equality is not part of the claim.

6 MR. GERINGER: It is part of the claim.

7 THE COURT: Oh, it is.

8 MR. GERINGER: It is in this element.

9 MR. MILCETIC: It is.

10 MR. GERINGER: It says substantially equal magnitude  
11 and phase.

12 THE COURT: That is a phenomena of the human body. It  
13 is not produced by the intention. It is produced by natural --

14 MR. GERINGER: Yes, your Honor. They are trying to  
15 detect the equal signals from the human body. Not create them,  
16 detect them.

17 THE COURT: Okay.

18 MR. GERINGER: Your Honor, magnitude and phase, would  
19 your Honor like us to explain?

20 THE COURT: Yes.

21 MR. GERINGER: Magnitude size. Phase, if your Honor  
22 remembers, sign waves or cosign waves, a phase, if I am not at  
23 the ocean, I am at Jones Beach and a see a wave come from troth  
24 to troth, that is a period from peak to peak. That is a  
25 period. So phase if two waves are in the same phase, they

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1 build each other one. If two waves are sign and postsign out  
2 of phase, they kind of cancel each other down. Remember that  
3 minus the negative turns into a positive. If my muscle signals  
4 are out of phase, they don't cancel out. They add up. Big  
5 noise becomes bigger noise. So phase is very important for the  
6 cancelling.

7 Anything else on the whereby two equal signals  
8 element?

9 THE COURT: No. When you have the agreed boxes is  
10 that all that I need for the definition, or is it only part?

11 MR. GERINGER: It is only part, your Honor. it is the  
12 agreed part, your Honor. Generally though we segregated out a  
13 term that we can agree on entirely.

14 THE COURT: I think you folks can do better. Get your  
15 same definition into the unagreed part.

16 MR. MILCETIC: We'll work on it, yes.

17 THE COURT: Let me give you my philosophy of the  
18 Markman. It is to help me decide the real issues. It is not  
19 to get an advance from one side or the other. The most  
20 successful Markman hearing will be to interpret the patent in a  
21 simplified way to give each of you room to make your arguments  
22 on the substance. So I am not looking to give either side an  
23 edge. I am not looking to make a dispositive ruling on the  
24 claim either. That will come in the next phase. A successful  
25 Markman hearing will make all our lives simpler.

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1 MR. GERINGER: Thank you, your Honor.

2 THE COURT: I think that is really important.

3 MR. GERINGER: Yes. Let me presage how simple what we  
4 think we will be arguing. We think it is as simple lineal  
5 spaced relationship that they say -- sorry. If you look at the  
6 figure that is up there, they say the electrodes have to be  
7 thinner than the gap between. They say that doesn't have to be  
8 the case. That is the perfect example. Nautilus will say,  
9 There has to be a fat middle part, the spacing between has to  
10 be fatter than the actual electrode width and Biosig will say,  
11 No such limitations or can be any spaced relationship.

12 THE COURT: If it helps you can also add a simple  
13 contention to the definition so it becomes clear what you each  
14 argue substantively.

15 MR. MILCETIC: That's fine.

16 THE COURT: That will also help the definition. The  
17 goal is not to have a fight over the definition. The goal is  
18 to make it as simple and clear as possible.

19 MR. MILCETIC: We would be fine with your Honor's  
20 definition, which is the distance between two points.

21 THE COURT: So we've already accomplished that.

22 Now we're stuck with electromyogram signal  
23 electromechanical signal. If we are talking about  
24 electromyogram it is the signal from the heart. What is  
25 electomechanics?

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1 MR. MILCETIC: Myogram is the muscle signal.

2 THE COURT: Reversed.

3 MR. MILCETIC: Cardiogram is the heart.

4 THE COURT: What you want to do is measure each  
5 dampening the effects of muscle signals and accentuating the  
6 effects of the heart signals in order to make a clear  
7 differential meaning.

8 MR. GERINGER: Yes, your Honor. Dampen the muscle,  
9 accentuate the heart.

10 MR. MILCETIC: Both parties agree on that.

11 MR. GERINGER: May I make a point?

12 THE COURT: Yes.

13 MR. GERINGER: There are a lot of ways to calculate a  
14 heart signal, a lot of ways to get a heart signal, a lot of  
15 ways to do it with a differential amplifier. We are going to  
16 be arguing that they do it in a specific way and when they  
17 distinguish other devices that had two pairs of electrodes and  
18 differential amplifier to dampen the muscle and accentuate the  
19 heart, they said, ah, but we do it in a different way. So it  
20 is not just dampening the muscle and accentuating the heart, it  
21 is whether we will contend that they said they do that in this  
22 particular way.

23 THE COURT: So there has to be something in the claim  
24 that says that?

25 MR. GERINGER: Yes, your Honor, or in the file

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1 history. Because of course a patentee can clarify what they  
2 mean in the file history.

3 A very important thing will happen here, your Honor.  
4 If during the reexam they change the scope of the claim, they  
5 didn't change any of the literal world, they changed the scope,  
6 13 years of alleged damages and discovery will disappear. They  
7 filed in 2004, six-year statute of limitations. They were  
8 claiming damages from 1998. If in reexam the patentee is  
9 forced to change the substance of the claim if it is not  
10 substantially identical when it gets out, everything before the  
11 reissue disappears.

12 THE COURT: I don't know where that comes in in the  
13 Markman hearing.

14 MR. GERINGER: Because as a matter of law you are also  
15 looking at the claim before.

16 THE COURT: What you want to do is part of the  
17 definitions is no note the change, if any, but there will be a  
18 lot of tension in that?

19 MR. GERINGER: Yes, your Honor. Each of the black  
20 squared boxes is changed, your Honor we contend obviously. We  
21 respect the fact that Biosig disagrees.

22 THE COURT: It would be useful to note that, the  
23 respective intentions of the parties. That is going to be the  
24 next step.

25 MR. GERINGER: We'll meet and confer and try to work

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1 out contentions.

2 THE COURT: We can accommodate you July 27th at  
3 10:30 a.m. or July 28 at 2:30.

4 MR. MILCETIC: Either one of those dates are fine with  
5 Biosig.

6 THE COURT: July 27th.

7 MR. GERINGER: Okay, your Honor. Shall we submit  
8 written --

9 THE COURT: July 27 at 10:30.

10 MR. GERINGER: 27th?

11 THE COURT: July 27th, 10:30.

12 MR. GERINGER: Yes. Shall we make written submissions  
13 on the 20th?

14 THE COURT: Yes.

15 MR. MILCETIC: That's fine.

16 MR. GERINGER: Those written submissions, your Honor,  
17 would you like if we are able to get an approved chart to your  
18 Honor --

19 THE COURT: Yes. Or even a little later. Are we  
20 going to have joint submissions?

21 MR. GERINGER: The chart will be joint again, your  
22 Honor.

23 THE COURT: How about your submissions?

24 MR. GERINGER: The 10 pages each was going to be --

25 MR. MILCETIC: Argument.

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1 THE COURT: So you want to do it at the same time?

2 MR. GERINGER: That's a good idea because it is  
3 basically the contentions that we put in the chart.

4 MR. MILCETIC: So one date for making those  
5 submissions and a subsequent date for opposition and responses.

6 MR. GERINGER: That will be fine.

7 THE COURT: And the second one should be short. I  
8 think we have gone enough.

9 MR. GERINGER: Yes, your Honor.

10 THE COURT: Very good. We did this once earlier.

11 MR. GERINGER: Your Honor, may I propose July 13th  
12 original submissions and rebuttal on the 20th?

13 THE COURT: Yes.

14 MR. GERINGER: 10 pages for originals and five or less  
15 for replies.

16 THE COURT: Excellent. But don't play around with  
17 five.

18 MR. GERINGER: You mean if I say five, I better mean  
19 five?

20 THE COURT: Yes. Don't play around with margins. The  
21 Second Circuit is 14.5, but 12 is okay.

22 MR. GERINGER: My prior experience is that if I  
23 haven't made my point in 10 pages, I am having a bigger problem  
24 than the length of my brief.

25 THE COURT: Right.

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1 MR. MILCETIC: To be clear, your Honor, on behalf of  
2 Biosig, I think we'll be submitting a joint appendix as well.

3 MR. GERINGER: Yes, your Honor. We apologize in  
4 advance, file histories is 800 pages.

5 THE COURT: It is not my first patent case. You can  
6 use an appendix that is abbreviated. That is good.

7 MR. GERINGER: That would be very possible, your  
8 Honor, because much of the appendix will not be at issue. We  
9 can submit an abbreviated one and we'll agree on that with  
10 Biosig and get it down to a couple hundred pages, which is  
11 brief for this.

12 THE COURT: Good.

13 MR. GERINGER: Anything else, your Honor?

14 THE COURT: Have a good 4th of July.

15 MR. MILCETIC: Thank you, your Honor.

16 MR. GERINGER: Thank you, your Honor.

17 o0o